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THESIS

DISTRIBUTION OF BUDGETED OUTLAYS WITH REGARD TO THE AVAILABILITY OF FUNDS IN THE DOD BUDGET

by

John P. Anderson

June 1983

Thesis Advisor: P. Bromiley

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20. Abstract, continued . . .

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Distribution of Budgeted Outlays with Regard to the Availability of Funds in the DOD Budget

by

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Lieutenant, United States Navy
B.S., United States Naval Academy, 1978

Submitted in partial fulfillment of
the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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TABLE OF CONTENTS

I. INTRODUCTION ---------------------------------- 6

II. BACKGROUND ---------------------------------- 8

A. BUDGETING LITERATURE --------------------- 8

B. THE STUDY ------------------------------ 17

III. DATABASE AND RESULTS -------------------------- 18

A. DATA BASE AND SOURCES -------------------- 18

B. RESULTS -------------------------------- 20

C. SUMMARY OF RESULTS ----------------------- 35

IV. CONCLUSION ------------------------------------- 38

A. DISTRIBUTION OF THE DOD BUDGET ----------- 38

B. POLICY PREFERENCES VS. "CUTABILITY" ------ 39

C. AREAS FOR FURTHER STUDY ------------------ 43

APPENDIX A: BUDGET DATA IN CURRENT DOLLARS --------- 45

APPENDIX B: BUDGET DATA IN CONSTANT 1972 DOLLARS --- 46

LIST OF REFERENCES --------------------------------- 48

INITIAL DISTRIBUTION LIST -------------------------- 50

I. INTRODUCTION

Scrutiny of the Federal budget continues to increase as budget deficits reach staggering levels. Public awareness of the Federal budget emphasizes the well publicized Department of Defense request and public pressure to reduce defense spending is growing. The current Administration's plans for the largest peacetime military buildup in U.S. history is meeting growing opposition from Congress and the public. Pressure is increasing to shift Federal emphasis toward solving non-defense problems, such as welfare, unemployment, and revitalization of the education system.

Detailed examination of the Federal budget is not new and neither is the emphasis on the defense budget. Consequently there has been a considerable amount of research done on the subject of budgeting behavior in attempts to describe the way in which budget figures are reached [Ref.1]. There is a body of literature which proposes that Congressional budget action on non-defense and defense related areas of the budget is conducted in an across-the-board, incremental manner [Refs.2, 3, 4 and 5].

In this approach Congress is more interested in how much is spent than in how it is spent. An opposing body of research argues that budgeting activity is non-incremental and that an agency's final appropriation is determined more by

Congressional desire to control how funds are spent than by how much is spent [Refs. 6, 7, 8 and 9].

This thesis performs descriptive data analysis on defense budget data for the last 30 years in order to discover if there are different patterns of distribution across appropriations types under different conditions of availability of funds. In addition, the study will attempt to discover evidence of either incremental or non-incremental budget activity. Where previous studies [Refs. 2, 3, 5 and 6] have dealt with Congressional action with regard to appropriations, this study shall examine Presidential/OMB action on budgeted outlays.

II. BACKGROUND

A. BUDGETING LITERATURE

The literature concerning governmental budgetary behavior can be divided into two general groups [Ref. 1]. The first is the incrementalist theory, which proposes that budgetary action consists of making incremental changes based primarily on the agency's current request and appropriation for the prior year [Ref. 2]. The second group is that of non-incremental budget behavior: that budget changes are more complex than the incremental theory would suggest and that factors other than prior year appropriations play major or dominant roles [Ref. 6].

The incremental theory consists of three major points. First, agency budgets constitute starting levels from which incremental changes occur. Second, these base levels determine subsequent allocations. Third, changes to base levels will be incremental in nature. [Ref. 7, p. 49] This theory was presented by Davis, Dempster, and Wildavsky [Ref. 2], who propose that:

> "...the behavior of the budgetary process of the United States government results in aggregate decisions similar to those produced by a set of simple decision rules that are linear and temporally stable." [Ref. 2: p. 529]

The theory proposes that the current federal budget is so complex that decision makers are incapable of dealing

with the budget as a whole and so use aids to calculation, which make their calculations predictable. Davis et al. present eight linear equations which reduce budget decisions to simple, experimentally derived and tested mathematical models. These equations, which represent Congressional decision making, are based primarily on the agency's prior year appropriation and its current request plus a random disturbance variable.

The evidence presented by Davis, Dempster, and Wildavsky for fifty-six non-defense agencies shows that their equations describe past budget actions very accurately, however, they stress that the equations are not good predictive models due to the fact that the process is stable only for short periods. Without a method of determining shift points within the model any predictions produced by the model must be highly suspect [Ref. 2, p. 542].

The incrementalist model proposed by Fenno uses annual percent change of the agency's appropriation [ref. 3]. It is worth looking at Fenno's work since this thesis also uses percent changes as a measure. Fenno's operationalization of incrementalism uses two measures of change in the federal budget: (1) the relationships between agency requests and Congressional appropriations, and (2) the change in appropriations granted a given agency from one year to the next [Ref. 3, p. 352]. Using these criteria, budget action is considered incremental if Congress' cut of the

agency's request is incremental, regardless of the agency's absolute change. Fenno studied the House Appropriations Committee and used a 20 percent growth rate as the cut off for incremental behavior. He found that almost three-quarters of the 36 agencies studied were within the range [Ref. 3, p. 354]. One of the criticisms of Fenno's work is that his selection of a 20 percent cut off point is far too high, especially since he argues elsewhere that 5 percent changes are significant [Ref. 8, p. 62].

The incrementalist theory is also supported by Wanat, who has further strengthened the theory by showing that the model succeeds as an explanatory, as well as descriptive, tool. On the other hand, Wanat also indicates that many of the statistical of Davis et al. are not as impressive as originally thought [Ref. 4].

There is a growing body of research [Refs. 6, 7, 8 and 9] which challenges the incremental theory on numerous points. This opposing body of thought concerning budget behavior can be considered as "non-incremental" in nature. Where incrementalism proposes that agencies generally arrive at their budget requests by taking a relatively fixed percentage increase of the prior year's appropriation and that Congress arrives at the final appropriation by taking a standard percentage cut of the agency request, the non-incremental group proposes that budget action depends, to an equal or greater extent, on factors other than the

agency's prior appropriations and current request and that part of this action is political in nature.

When the budget is disaggregated from the agency level to the program level a great deal of non-incremental activity becomes evident [Ref. 6, p. 956]. The choice of the program as the unit of analysis reveals an allocation process marked by trade offs and bureaucratic competition. Some programs within the agency flourish while others steadily decline and still others fluctuate from year to year [Ref. 6]. Some non-incrementalist researchers [Refs. 7 and 10] propose that how a program fares has more to do with how capable the division directors are at combating competing claims and mustering political and presidential support for their programs than with the prior year's appropriation.

Non-incremental approaches propose that budget action, viewed as a whole, appears to be far more stable than close examination of its component parts would indicate. The incremental theory provides little explanation of the role of the Office of Management and Budget (OMB), while the non-incremental approaches hypothesize that OMB support and agency assertiveness play major roles in determining an agency's final appropriation. Assertiveness can be defined as the propensity for agencies to attempt to expand their programs and budgets [Ref. 11, p. 233]. This strategy is often exhibited in the percent increase the agency requests

over last year's appropriation. When "aggressive" agencies request large increases they are likely to receive large cuts in their request but generally end up with larger absolute gains than if they had made moderate requests [Ref. 11, p. 234]. Some of the incremental theorists, particularly Sharkansky [Ref. 5], also support this idea. Previous appropriation levels are undoubtedly important, however, factors such as the increase in the agency's request, increase in agency size, and presidential attention and support are still more important. The idea that the capabilities and support of key players are important is common to most versions of the non-incremental approach [Ref. 10]. Other factors, such as agency size, maturity, and managerial experience, also have important roles in explaining budget allocations [Ref. 7]. The proposal that the agency should request as large an increase as it can justify in order to maximize long term growth is also a common idea.

Kanter's study of the defense budget from FY1960 to FY1970 [Ref. 9] classified budget action as being either programmatic or budgetary (non-programmatic). The budgetary viewpoint contends that participants in the budget process are primarily concerned with how mcuh money is spent. The programmatic viewpoint contends that primary emphasis is on how the money is spent [ref. 9, p. 130]. The first measure of Congressional activity Kanter uses to distinguish between

budgetary and programmatic behavior is the presence or absence of changes in the President's budget request for four major appropriation categories. He compares the relative concentration of "no change" outcomes for each category to an index of relative concentration, which would equal 1.00 for all categories if Congressional activity were equally distributed [Ref. 9, p. 133]. Those categories which are near or exceed the index are considered to exhibit budgetary action, while those significantly below indicate programmatic behavior.

The second measure used is the mean size of Congressional changes for each category compared to the mean change for the DOD total. Those categories which exceed the DOD mean are considered to indicate programmatic behavior, while those that are below the DOD mean indicate budgetary behavior [Ref. 9, p. 133].

Kanter's study shows, at least for the period in question, that Congressional budget action is highly programmatic in nature. He proposes, and presents evidence to support, the theory that Congressional budget action appears to be incremental at the DOD level due to the fact that Congress makes relatively small and infrequent changes in the Personnel and Operations & Maintenance (O&M) categories, which together account for approximately half of the total DOD budget. Congressional budget action has been concentrated in the Procurement and Research, Development,

Test & Evaluation (RDT&E) categories [Ref. 9, p. 142]. Kanter's study also shows that the President's budget action also exhibited programmatic behavior. While Congressional changes to the President's budget rarely exceeded 4 percent, the administration's changes to the agencies' requests ranged from 10 to 20 percent [Ref. 9, p. 131]. Congress and the administration do occasionally employ across the board cuts but the evidence supports the view that the majority of budget decisions are driven by programmatic considerations.

In a second study of the defense budget from FY1955 to FY1969, Kanter [Ref. 12] again presents evidence of programmatic budget behavior. Throughout the Eisenhower and Kennedy-Johnson administrations, budget decisions, which appear non-programmatic at the DOD level, exhibit strong programmatic indications at the appropriation category or service level.

A slightly different perspective on incrementalism is presented by Crecine [Ref. 13] and Bromiley and Crecine [Ref. 14]. This research takes the previous year's budget as a base and discusses adjustments which are largely non-programmatic but includes several new variables and formulations. The most important idea is that the total available for expenditure is determined, at least partially, independently of the sub-allocations. That is, if each agency or department budget is solely determined by either

programmatic concerns or incrementalism, then the total for a department or for government expenditures would be just a sum. Bromiley and Crecine [Ref. 14] and Crecine [Ref. 13] emphasize the importance of both kinds of information. The budget problem is seen as one of adjusting sub-allocations within a financial constraint. Within DOD, this kind of adjustment means allocating a given total budget for DOD to the numerous appropriations or programmatic categories. When the problem is presented in this way, it becomes obvious that all categories are not created equal. Some agencies/programs are presidentially salient; the President's pet programs for instance. Some agencies are largely uncontrollable as they are largely determined by exogenous events. Finally, some programs are simply more easily altered than others. It is easier to delay a construction program or to extend a new weapons system in R&D than it is to close military bases or lay off permanent civil servants. This line of research includes a number of influences such as the previous allocation, the total funds available, the political, economic, and rational needs for the program, and the ease with which a given program can be altered. It should be further noted, that this line of work has observed that not only are all categories not equal, but that there may be systematic differences in allocation depending on the relative "cutability" of categories and programs.

Crecine presents a list of decision rules utilized by OMB in making adjustments, especially downward ones, to budget items. The list includes adjustment procedures such as reducing or deferring program increases, deferring construction, and eliminating programs [Ref. 13, p. 27]. In addition, the presidential saliency of a program may have a profound effect on OMB's willingness to make changes [Ref. 14, p. 1054].

A paper by Franklin C. Spinney [Ref. 15] does not approach the question of defense budgeting from either of the above viewpoints. Spinney's paper looks at which the results of these budget decisions have been as opposed to what motivated them. The problems that Spinney sees within the defense establishment are caused more by how the budget is spent than by how big it is.

Spinney's study found that the costs of procurement programs are consistently underestimated as are operating and maintenance costs. He also found that when funds are readily available there is a strong tendency to begin new programs instead of increasing the funding of existing ones. This results in a marked increase in systems under development. In addition, existing programs are very rarely canceled, regardless of the availability of funds or the current usefulness of the system [Ref. 15, p. 2].

The lack of emphasis on personnel and O&M accounts has been in spite of the fact that new weapons systems are

becoming increasingly expensive to man and operate. The result of this behavior is that the services are faced with smaller numbers of highly complex weapons systems with even more complex systems under development. As a consequence, historical budget behavior has resulted in shrinking forces, persistent low peacetime readiness, and declining rates of modernization [Ref. 15, p. 2].

B. THE STUDY

The intent of this thesis is to determine the effect changing availability of funds at the DOD level has on the categories which make up the DOD total and to determine whether or not identifiable patterns exist.

This study shall examine budget data for the Department of Defense from fiscal year 1955 through fiscal year 1984. The subject of the examination will be the DOD total and four major appropriations categories. Gross budget data shall be examined first in order to obtain a feel for the overall growth of the budget and its constituent parts.

In order to facilitate further examination, the data will be broken down into three groups based on the growth rate of the DOD total. Each of these groups will, in turn, be examined on the basis of budget shares, growth rates, and the percentage of the annual DOD increment that went to each of the four categories.

III. DATA BASE AND RESULTS

A. DATA BASE AND SOURCES

The source of the budget data used in this study was The Budget of the United States Government [Ref. 16] for the fiscal years 1955 through 1984. The transitional quarter (TQ) from July 1, 1976 to September 30, 1976 has been excluded. The TQ appropriations and outlays were based on continuing resolutions and as such were intentionally incremental in nature. In addition, these figures are relatively small by themselves but aggregating them with the figures for either FY76 or FY77 would distort the data for that year. The appropriate GNP deflators for FY83 and FY83 were obtained from the Budget of the United States Government for FY84. GNP deflators for other years were obtained from the Economic Report of the President for 1983 [Ref. 17].

The data consists of aggregate figures for four DOD major appropriations categories. Estimated outlay figures are used throughout and are aggregated for the following categories:

Military Personnel (MP)
Operation and Maintenance (O&M)
Procurement (PROC)
Research, Development, Test & Evaluation (RDT&E)

The MP category consists of all MP categories for the Army, Navy, Marine Corps, and Air Force, including reserves and National Guard where applicable. No amounts for retired pay have been included.

The O&M category contains all O&M line items for the four services and their reserves and National Guard. No amounts for Defense agencies, Court of Military Appeals, or other general boards have been included. Defense agencies are non-military agencies and activities of DOD such as the Office of the Secretary of Defense, the Defense Logistics agency, and other intelligence and communications, training, medical, and administrative activities.

The PROC category consists of all procurement line items for the four services, their reserves and the National Guard. Defense agencies procurement has been excluded.

The RDT&E category consists of all research items for the Army, Navy, and Air Force (there is no separate category for the Marine Corps). Defense agency RDT&E has been excluded.

Categories for Military Construction, Family Housing, and the Special Foreign Currency Program have been excluded from the study as have all Stock, Industrial, Management, and Trust Funds.

On the average, the four categories studied account for 88% of the DOD total annual budgeted outlays. While the format of the Budget has changed somewhat over the years,

every effort has been made to ensure that the items included in the various categories have remained as consistent as possible. Current outlay figures were translated into constant 1972 dollars using the GNP deflator. Current dollar budget data appear in Appendix A and constant dollar budget data appear in Appendix B. All dollar figures are in millions of dollars unless otherwise noted.

B. RESULTS

In the period from FY 1955 to FY 1984, the defense budget in current dollars increased from $41,850 million to $238,600 million, an average annual increase of $6,558 million. In constant 1972 dollars, the budget went from $68,787 million to $104,010 million, an average annual increase of $1,174 million. During the same period MP experienced average annual increases of $1,227 million ($98 million in '72 dollars), O&M experienced annual increases of $1,803 million ($358 million in '72 dollars), PROC exhibited average annual growth of $1,744 million ($148 million in '72 dollars), and RDT&E experienced increases of $746 million ($299 million in '72 dollars).

These figures show, in a very rough way, the growth of the defense budget but they tell little of how the components of the budget have changed over the years.

1. Budget Shares

Table 1 shows how the budget shares of the DOD budget have varied during the period under study. Table 1

shows that, while the total defense budget increased during the period, the distribution of funds within the budget changed considerably. MP and PROC made up 19 percent less of the budget in FY84 than they had in FY55, while O&M decreased by 2 percent and RDT&E increased by 139 percent. These changes were not simple linear changes, but rather the four categories experienced fluctuating fortunes.

In order to facilitate further examination of budget behavior, the 29 years from FY56 to FY84 have been broken down into three groups. The groups consist of the top and middle ten and the bottom nine years determined on the basis of the percent increase over the previous year for the DOD total. In order to eliminate the effect of annual inflation the budget figures have been transformed into constant 1972 dollars. The top group consists of those ten years in which defense funds were "abundant" (i.e., the years which experienced the greatest percent increases over the previous years). The bottom group consists of the nine years in which defense funds could be considered as "tight".

The remaining group consists of the ten years in which the availability of funds could be considered as "normal".

Table 2 presents data for the top group presented by the percentage of the DOD total accounted for by the individual categories.

This table is similar to Table 1, but in order to eliminate the effect of inflaction and to be consistent with the

TABLE 1

CATEGORIES AS PERCENT OF DOD TOTAL (PERCENTAGE OF DOD TOTAL)

FY	DOD TOTAL	MP	O&M	PROC	RDT&E
56	34,000	30.35	26.77	35.97	3.79
57	35,547	30.74	26.22	32.84	4.02
58	38,000	31.85	28.49	34.93	4.44
59	39,779	28.74	26.60	34.89	4.51
60	40,945	27.40	25.19	34.04	6.94
61	42,745	26.56	24.37	32.40	7.31
62	44,600	25.70	23.85	32.34	8.83
63	48,300	25.40	23.05	32.67	11.80
64	51,000	23.90	22.02	32.00	12.86
65	51,200	25.62	22.48	28.78	11.84
66	47,900	27.75	24.40	27.52	12.34
67	57,100	28.70	24.83	27.87	10.39
68	72,300	27.37	24.93	29.85	9.28
69	76,806	26.70	27.52	30.46	9.48
70	78,471	27.33	26.40	29.79	9.30
71	71,190	29.37	25.93	26.31	9.69
72	74,975	26.82	25.33	23.84	9.32
73	75,903	29.38	25.23	21.12	9.75
74	78,200	28.77	25.78	21.01	9.68
75	84,600	28.87	27.22	19.25	9.89
76	89,800	27.84	28.55	18.28	10.00
77	99,561	25.36	27.93	20.25	9.77
78	102,523	23.74	27.78	21.56	9.67
79	115,200	23.32	28.97	20.84	9.48
80	122,700	23.18	28.61	20.58	9.62
81	142,700	22.22	29.62	21.17	9.56
82	184,399	20.76	29.62	21.57	9.21
83	215,900	20.62	27.73	25.19	9.34
84	238,600	19.98	27.12	28.29	9.96
Mean	188,886	26.36	26.29	27.09	9.04

following tables, is presented in constant 1972 dollars instead of current year dollars. When funds are abundant (Table 2) PROC accounts for the greatest portion of the budget (28.08 percent), followed closely by O&M, while RDT&E accounts for the lowest percentage.

TABLE 2

PERCENT OF DOD TOTAL
(Constant '72 Dollars)

Top 10

FY	TOTAL DOD	MP	O&M	PROC	RDT&E
82	$ 88,983	20.76	29.62	21.57	9.21
68	87,594	27.37	24.93	29.85	9.28
67	72,287	28.70	24.83	27.87	10.39
83	97,472	20.62	27.73	25.19	9.34
84	104,010	19.98	27.12	28.29	9.96
63	67,392	25.40	23.05	32.67	11.80
81	72,989	22.22	29.62	21.17	9.56
58	57,541	31.85	28.49	34.93	4.44
77	71,090	25.36	27.93	20.25	9.77
64	70,084	23.90	22.02	32.00	12.86
Mean	78,944	24.62	26.53	27.38	9.66
Med.	72,638	24.63	27.43	28.08	9.67

Table 3 presents the data for the middle group. PROC again accounts for the greatest percentage of the defense budget, followed by MP, O&M, and RDT&E. MP and PROC changed by more than 10 percent, while O&M and RDT&E changed by less than 7 percent.

When funds are "tight" (Table 4) there is additional change. PROC had the largest decrease and now contributes

less of the defense budget than O&M or MP, while RDT&E was the only category to increase over its previous value.

TABLE 3

PERCENT OF DOD TOTAL
(Constant '72 Dollars)

Middle 10

FY	TOTAL DOD	MP	O&M	PROC	RDT&E
61	$61,654	26.56	24.37	32.40	7.31
62	63,249	25.70	23.85	32.34	8.83
78	72,811	23.74	27.78	21.56	9.67
59	59,845	28.74	26.60	34.89	4.51
60	59,600	27.40	25.19	34.04	6.94
72	74,975	26.82	25.33	23.84	9.32
57	54,747	30.74	26.22	32.84	4.02
69	88,496	26.70	27.52	30.46	9.48
76	67,856	27.84	28.55	18.28	10.00
75	67,253	28.87	27.22	19.25	9.89
Mean	67,549	27.31	26.26	28.01	8.00
Med.	65,251	27.11	26.41	31.40	9.05

TABLE 4

PERCENT OF DOD TOTAL
(Constant '72 Dollars)

Bottom 9

FY	TOTAL DOD	MP	O&M	PROC	RDT&E
65	$68,854	25.62	22.48	28.78	11.84
80	68,686	23.18	28.61	20.58	9.62
70	85,808	27.33	26.40	29.79	9.30
79	70,493	23.32	28.97	20.84	9.48
73	71,776	29.38	25.23	21.12	9.75
74	67,953	28.77	25.78	21.01	9.68
66	62,402	27.75	24.40	27.52	12.34
71	74,149	29.37	25.92	26.31	9.69
56	54,149	30.35	26.77	35.97	3.97

FY	TOTAL DOD	MP	O&M	PROC	RDT&E
Mean	69,341	27.23	26.06	25.77	9.52
Med.	68,854	27.75	25.92	26.31	9.68

Examining these tables together shows fluctuations in the behavior of the four categories. In moving from affluent to poor groupings the MP average rises initially by more than 10 percent then falls slightly.

O&M remains relatively constant throughout the spectrum and PROC rises by approximately 2 percent then falls by almost 8 percent. RDT&E falls by approximately 17 percent then rises back near its initial level.

2. Growth Rates

Table 5 presents the percent increase from the previous year's budget in constant '72 dollars for the four categories and the DOD total for the period FY56 to FY84. During this period the DOD's annual increase averaged 1.81 percent of the previous year's budgeted outlays. MP's annual rate of change averaged .74, while O&M's average rate of change was 2.02 percent, PROC's average rate of change was 1.62 percent, and RDT&E's average rate of change was 8.29 percent. RDT&E, which is the smallest of the four categories, had the highest rate of change by a considerable margin. Examination of Table 5 shows that the rates of change of the four budget categories were not steady, consistent increments but that there were rises and falls in each of the categories. The DOD total ranged from a 21.28 decrement to a 21.91 increment. The other categories show similar fluctuations.

TABLE 5

PERCENT CHANGE FROM PREVIOUS FISCAL YEAR
(In Constant '72 Dollars)

FY	DOD	MP	O&M	PROC	RDT&E
56	-21.28	-7.96	-17.01	-22.03	54.80
57	1.10	2.41	-.97	-7.71	2.43
58	5.10	1.86	6.80	29.86	8.63
59	2.27	-1.38	2.07	-12.06	10.99
60	1.28	-3.43	-4.07	-1.18	55.78
61	3.45	.26	.07	-1.54	8.90
62	2.59	-.84	.28	2.26	23.81
63	6.55	5.43	3.09	7.78	42.60
64	3.99	-2.14	-.64	1.87	13.35
65	-1.76	5.29	.31	-11.64	-9.60
66	-9.37	-1.83	-1.65	-13.35	-5.52
67	15.84	19.81	17.89	17.35	-2.42
68	21.18	15.57	21.65	29.78	8.20
69	1.03	-1.45	11.54	3.08	3.18
70	-3.04	-.75	-7.00	-5.18	-4.89
71	-13.59	-7.12	-15.14	-23.68	-9.96
72	1.11	-7.69	-1.18	-8.37	-2.76
73	-4.27	4.89	-4.65	-15.20	.16
74	-5.33	-7.28	-3.26	-5.83	-5.94
75	-1.03	-.67	4.50	-9.28	1.10
76	.89	-2.72	5.81	-4.21	2.49
77	4.77	-4.56	2.49	16.05	1.87
78	2.42	-4.11	1.87	9.06	1.38
79	-3.18	-4.91	.98	-6.44	-5.08
80	-2.56	-3.14	-3.78	-3.79	-1.14
81	6.26	1.84	10.01	9.31	5.57
82	21.91	13.91	21.93	24.23	17.44
83	9.54	8.82	2.55	27.94	11.13
84	6.71	3.39	4.36	19.84	13.78
Mean	1.81	.74	2.02	1.62	8.29

Table 6 uses the same breakdown by years as before but presents the data by percent change from the previous year. This table gives an indication of the distribution of defense funds when funds are "abundant". When funds are readily available, PROC and RDT&E experience the highest average annual increases. The increases for both these categories exceed the DOD increase, while the MP average is 32 percent below and the O&M average is 12 percent below.

Table 7 presents the data for the middle group. The DOD average has decreased by 89 percent and two categories, MP and PROC, now experience average annual decreases.

TABLE 6

TOP 10 YEARS BY PERCENT CHANGE IN DOD OUTLAYS (Constant '72 Dollars)

(Percent Change From Previous Year)

FY	DOD	MP	O&M	PROC	RDT&E
82	21.91	13.91	21.93	24.23	17.44
68	21.18	15.57	21.65	29.78	8.20
67	15.84	19.81	17.89	17.35	-2.42
83	9.54	8.82	2.55	27.92	11.13
84	6.71	3.39	4.36	19.84	13.78
63	6.55	5.43	3.09	7.78	42.60
81	6.26	1.84	10.01	9.31	5.57
58	5.10	1.86	6.80	29.86	8.63
77	4.77	-4.56	2.49	16.05	1.87
64	3.99	-2.14	-.64	1.87	13.35
Mean	10.19	6.39	9.01	18.40	12.02
Median	6.63	4.41	5.58	18.60	9.88

TABLE 7

MIDDLE 10 YEARS BY PERCENT CHANGE IN DOD TOTAL (Constant '72 Dollars)

(Percent Change From Previous Year)

FY	DOD	MP	O&M	PROC	RDT&E
61	3.45	.26	.07	-1.54	8.90
62	2.59	-.84	.28	2.26	23.81
78	2.42	-4.11	1.87	9.06	1.38
59	2.27	-1.38	2.07	-12.06	10.99
60	1.28	-3.43	-4.07	-1.18	55.78
72	1.11	-7.69	-1.18	-8.37	-2.76
57	1.10	2.41	-.97	-7.71	2.43
69	1.03	-1.45	11.54	3.08	3.18
76	.89	-2.72	5.81	-4.21	2.49
75	-1.03	-.67	4.50	-9.28	1.10
Mean	1.51	-1.96	1.99	-3.00	10.73
Median	1.20	-1.42	1.08	-2.88	2.87

PROC suffered the greatest shift and now experiences the largest average decreases. O&M is still increasing but at a much slower rate than in the previous group. RDT&E has also declined but less than the other categories and now experiences the highest average increase, still a healthy 10 percent real growth.

Table 8 presents the data for the bottom nine years. When defense funds are "tight" all the categories except RDT&E experience average decreases. RDT&E does the best under these conditions having an average gain, while MP has smaller decreases than either O&M or PROC. PROC again does the most poorly of the categories.

TABLE 8

BOTTOM 9 YEARS BY PERCENT CHANGE IN DOD TOTAL (Constant '72 Dollars)

(Percent Change From Previous Year)

FY	DOD	MP	O&M	PROC	RDT&E
65	-1.76	5.29	.31	-11.64	-9.60
80	-2.56	-3.14	-3.78	-3.79	-1.14
70	-3.04	-.75	-7.00	-5.18	-4.89
79	-3.18	-4.91	.98	-6.44	-5.08
73	-4.27	4.89	-4.65	-15.20	.16
74	-5.33	-7.28	-3.26	-5.83	-5.94
66	-9.37	-1.83	-1.65	-13.35	-5.52
71	-13.59	-7.12	-15.14	-23.68	-9.96
56	-21.28	-7.96	-17.07	-22.03	54.80
Mean	-6.93	-2.53	-5.70	-11.90	1.43
Median	-4.27	-3.14	-3.78	-11.64	-5.08

Through these three tables the distribution of DOD budgeted outlays becomes a little more clear. As defense funds become more and more scarce the distribution of those funds changes. The annual changes for the four categories all decrease but not to the same extent. PROC goes from having the highest average increases when funds are "abundant" to having the greatest average decreases when funds are "tight". MP behaves in exactly the opposite manner, gaining little in good times but losing little in tight times. RDT&E has average gains throughout the spectrum. O&M shows gains in the top and middle groups but loses at the low end, while the other categories suffer losses at the middle and low end.

3. Percentage of DOD Increment

Table 9 presents the percentage of the annual DOD increment that went to each of the four categories. When examining this table it must be remembered that the sign of each change is relative to the sign of the DOD increment for that year. For example, in FY72 the DOD total had increased by $826 million, while MP made up -202.78 percent of that change, or a $1,675 million decrease. In FY73 the DOD total decreased by $3,199 million, while MP made up -30.70 percent of that decrease, or a $982 million increase.

Due to the several large outlying points in the data, calculated means give a distorted view of the central tendency of these categories. In this case the medians reflect a truer picture of the budgetary behavior during the period.

Table 9 shows that PROC constituted the greatest proportion of the defense budget changes, followed by O&M, RDT&E, and MP. This would indicate that PROC, whose median change is 38 percent of the DOD change, is the item most dependent on the fortunes of the defense budget as a whole.

The final series of tables uses the previous breakdown but now the data is presented by the percentage of the annual DOD increment that is accounted for by each of the categories. Medians are presented along with the means for this data, as they were for Table 9. Discussion of these tables will concentrate on these medians.

TABLE 9

CATEGORY AS A PERCENT OF ANNUAL DOD CHANGE (Constant '72 Dollars)

(Percentage of DOD Change)

FY	DOD CHANGE	MP	O&M	PROC	RDT&E
56	-$14,638	9.71	20.38	27.60	-5.20
57	598	66.22	-23.41	-251.00	8.70
58	2,749	11.24	34.93	192.16	6.80
59	1,304	-17.49	24.39	-216.03	20.17
60	755	-76.69	-84.37	-32.19	196.16
61	2,054	2.09	.54	-15.38	17.92
62	1,595	-8.65	2.63	28.28	67.27
63	4,143	21.29	11.25	38.35	57.35
64	2,692	-13.60	-3.71	15.30	39.45
65	-1,230	-72.03	-3.90	212.28	70.33
66	-6,452	5.01	3.95	41.00	6.97
67	9,885	34.69	27.56	30.14	-1.88
68	15,307	21.10	25.39	39.20	4.02
69	902	-38.47	279.40	89.36	28.71
70	-2,688	4.35	63.43	51.90	15.25
71	-11,659	14.32	29.41	51.92	6.82
72	826	-202.78	-27.36	-197.58	-23.97
73	-3,199	-30.70	27.63	84.93	-.34
74	-3,823	40.15	15.45	23.08	10.87
75	-698	18.91	-112.89	189.83	-10.46
76	601	-87.85	176.87	-90.68	27.62
77	3,234	-26.65	14.90	61.56	3.93
78	1,721	-43.06	21.62	75.77	5.58
79	-2,318	36.58	-8.50	43.57	15.44
80	-1,807	28.56	42.68	30.82	4.21
81	4,303	6.79	45.71	30.61	8.55
82	15,994	14.11	29.64	23.41	7.60
83	8,489	19.19	7.93	63.18	10.79
84	6,538	10.42	18.03	74.53	19.18
Mean	1,215	-8.75	22.74	25.03	21.30
Median	1,304	6.79	18.03	38.35	8.70

When funds are "abundant" (Table 10) PROC accounts for the greatest portion (38.78 percent) of DOD changes. Since these changes are positive in nature, PROC receives substantial gains. The other categories also receive gains but the next highest category, O&M, realizes only about half the annual gains that PROC does.

TABLE 10

PERCENTAGE OF DOD ANNUAL CHANGE
(Constant '72 Dollars)

Top 10

FY	DOD CHANGE	MP	O&M	PROC	RDT&E
82	$15,994	14.11	29.64	29.64	7.60
68	15,307	21.10	25.39	39.20	4.20
67	9,885	34.69	27.56	30.14	-1.38
83	8,489	19.19	7.93	63.18	10.72
84	6,538	10.42	18.03	74.53	19.18
63	4,143	21.29	11.25	38.35	57.35
81	4,303	6.79	45.71	30.61	8.55
58	2,794	11.24	34.93	192.16	6.80
77	3,234	-26.65	14.90	61.56	3.93
64	2,692	-13.60	-3.71	15.30	39.45
Mean	5,961	9.86	21.16	56.84	15.60
Median	5,421	12.68	21.71	38.78	8.08

The middle group shows considerable difference. The DOD changes are still increases but now the median percentages of that change are negative for both MP and PROC. These two categories are now experiencing decreases even though the defense total is still increasing. In addition, the O&M percentage is low (1.59 percent) and the RDT&E percentage

has more than doubled. The low percentages and the fact that half of them are negative indicates that most of the DOD increment during these middle years is accounted for by those categories not subject to this study.

In the final group (Table 12), there is even more variation. The annual DOD change is now a decrement and all four categories are declining. PROC now accounts for the largest proportion of the total losses, while O&M accounts for less than half of PROC's proportion. RDT&E and MP suffer less than either of the other two categories.

TABLE 11

PERCENTAGE OF DOD ANNUAL CHANGE
(Constant '72 Dollars)

Middle 10

FY	DOD CHANGE	MP	O&M	PROC	RDT&E
61	$2,054	2.09	.54	-15.38	17.92
62	1,595	-8.65	2.63	28.28	67.27
78	1,721	-43.06	21.62	75.77	5.58
59	1,304	-17,94	24.39	-216.03	20.17
60	755	-76.69	-84.37	-32.19	196.16
72	826	-202.78	-27.36	-197.58	-23.97
57	598	66.22	-23.41	-251.00	8.70
69	902	-38.47	279.40	89.36	28.71
76	601	-87.85	176.87	-90.68	27.62
75	-698	18.91	-112.89	189.83	-10.46
Mean	966	-38.82	24.94	-41.96	33.77
Median	864	-28.21	1.59	-19.29	19.05

TABLE 12

PERCENTAGE OF DOD ANNUAL CHANGE
(Constant '72 Dollars)

Bottom 9

FY	DOD CHANGE	MP	O&M	PROC	RDT&E
65	$-1,230	-72.03	-3.90	212.28	70.33
80	-1,807	28.56	42.68	30.82	4.21
70	-2,688	4.35	63.43	51.90	15.25
79	-2,318	36.58	-8.50	43.57	15.44
73	-3,199	-30.70	27.63	84.93	-.34
74	-3,823	40.15	15.45	23.08	10.87
66	-6,452	5.01	3.95	41.00	6.97
71	-11,659	14.32	29.41	51.92	6.82
56	-14,638	9.71	20.38	37.60	-5.20
Mean	-5,313	3.99	21.17	64.12	13.82
Median	-3,199	9.71	20.38	43.57	6.97

Viewing these last three data sets together provides an interesting picture of the categories' behavior.

MP fluctuated from next to the least gains in high dollar conditions to having the greatest losses in the middle years, then to having the second lowest losses as a percentage of the DOD change in the leanest years. PROC declined from the highest gains to the second greatest losses then declined even further to have the greatest losses. O&M initially received the second highest gains and ended with the second greatest losses, while RDT&E changed from the lowest gain to the least loss.

C. SUMMARY OF RESULTS

The data presented in the previous section is summarized in Tables 13 and 14, which present the relative performance of the categories under varying availabilities of funds.

TABLE 13

RELATIVE RANKINGS OF CATEGORIES
(Percent Change From Previous Fiscal Year)

AVAILABILITY OF FUNDS	MP	O&M	PROC	RDT&E
"ABUNDANT"	4	3	1	2
"NORMAL"	3	2	4	1
"TIGHT"	2	3	4	1

Table 13 shows how relative performance changed based on annual growth rates. RDT&E does comparatively well when funds are "abundant" and even better when they are "tight". O&M shows little change under the differing conditions. MP does comparatively better as funds become less available and PROC shifts from doing the best when funds are available to doing the worst when they are "tight".

TABLE 14

RELATIVE RANKING OF CATEGORIES
(Percentage of DOD Annual Change)

AVAILABILITY OF FUNDS	MP	O&M	PROC	RDT&E
"ABUNDANT"	3	2	1	4
"NORMAL"	4	2	3	1
"TIGHT"	2	3	4	1

Table 14 presents relative performance rankings based on the percentage of the annual DOD increment that goes to each

category. RTD&E again does better as funds get tighter and O&M still shows little change. MP still does better overall as funds become less available and PROC again shifts from doing the best to doing the worst, although more gradually.

Patterns emerge as the data is examined in detail. MP experiences shifts as conditions change but not over a wide range. MP neither realizes large gains when times are good, nor suffers much when funds are tight. O&M exhibits somewhat more variation and does comparatively better than MP when funds are available but also suffers more when they are tight.

RDT&E, though the smallest of the four categories, always shows average increases. This category does not have as high a growth rate as PROC when funds are "abundant" but does the best under any other condition. While not the recipient of large increases in absolute terms (none above $1,300 million), RDT&E is relatively immune to cuts. The category experienced growth rates in excess of 50 percent twice, both times during years in the lower two groups, and suffered reductions in fewer years than any other category. When looking at Table 14, note that RDT&E is much smaller in absolute terms than the other categories. Thus, though it obtained the smallest portion of the DOD increment when funds were abundant, this translated into next to the most rapid growth rate compared to its program size.

PROC is the category showing the widest variation in relative success. The category does the best when funds are

"abundant" and experience gains far above any other category. When funds become less available, however, PROC suffers the greatest cuts.

These performance patterns present evidence to support the notion of strong interdependence between certain of the categories and also the concept that certain categories are more adjustable than others. MP and O&M appear to be less variable than the other two categories and they exhibit smaller year to year fluctuations.

The data further shows clearly just how deceptive looking at raw totals can be. In years in which the total DOD budget changed little there may be considerable redistributions of the funds among the categories. For example, in FY76 the DCD total grew at the rate of only .89 percent, but MP experienced a 2.72 percent decrease, O&M experienced 5.81 percent growth, PROC suffered a 4.21 percent decrease, and RDT&E experienced 2.49 percent growth. In terms of budget shares MP decreased by 1.03 percentage points, O&M increased by 1.33 percentage points, PROC decreased by .97 percentage points, and RDT&E decreased by .23 percentage points. A considerable amount of variation can be hidden in gross budget figures.

IV. CONCLUSIONS

A. DISTRIBUTION OF THE DOD BUDGET

The examination of the budget data shows that there are patterns of distribution within the total. When funds are readily available PROC and RDT&E show the highest growth rates (18.4 and 12.02 percent respectively), while O&M and MP exhibit slower growth. In the middle years RDT&E continues to grow, while PROC drops fourth place relative to the other categories. O&M and MP both rise. When funds are tight PROC remains in fourth place, while O&M drops to third place and MP rises to second. RDT&E is now the only category to experience average increases.

These patterns hold true regardless of whether the data is based on budget shares, growth rates, or percentage of DOD increment. PROC is always closely linked to the availability of funds. RDT&E always shows average increases, while O&M and MP do less well but are still fairly stable.

In addition to the patterns noted above, examination of Table 5 indicates something of a trade-off between PROC and RDT&E. In 16 of the 29 years studied PROC suffered decreases. In 50 percent of those years RDT&E experienced increases averaging 17.10 percent, which is more than double the overall average growth rate of 8.29 percent. In comparison, in the 13 years in which PROC increased, RDT&E

decreased only once (7.7 percent) at a rate of only 2.42 percent. This is indicative of a strong relationship between these two categories. In no other combination of categories are such trade-offs so noticable.

These figures provide added support to Spinney's arguments that funds are poured into PROC and RDT&E at the expense of O&M and MP when times are good and that, when times are bad, programs are merely extended in RDT&E instead of being canceled.

B. POLICY PREFERENCES VS. "CUTABILITY"

Previous research by Kanter [Ref. 5] has focused on Congressional behavior and investigated whether Congressional budgeting choices have been budgetary (i.e., concerned primarily with how much is spent) or programmatic (i.e., reflecting real program choices). This study of the President's budgets found evidence of both programmatic and budgetary effects. A review of Kanter's findings will provide a convenient guideline for the review of this study's findings.

Kanter's study of the defense budget during the '60's [Ref. 9] proposes that Congressional action on the Military Personnel and Operation and Maintenance categories is budgetary in nature and that action on the Procurement and Research, Development, Test, & Evaluation categories is programmatic. To some degree this is supported by the figures in this study, which indicate that Procurement and Research,

Development, Test & Evaluation receive the most attention at the President/OMB level, but by themselves, tell little about whether such attention is budgetary or programmatic. Examination of the categories in light of their "cutability" may provide some insight as to the nature of this attention. If budget behavior is primarily budgetary in nature then "cutable" categories should receive the largest increases when funds are abundant and should suffer the largest losses when they are tight. Categories which are relatively immune to cuts should remain comparatively stable.

Military Personnel is a category which is not easily cut. Military personnel cannot just be laid off during slack times. Conversely, personnel increases require some lead time and must take into account availability of potential volunteers, pay rates and other external factors. The budget data shows that Military Personnel has remained fairly stable relative to the other categories, as would be expected under conditions of budgetary behavior.

Operation and Maintenance is somewhat more "cutable" than Military Personnel. Steaming and flying hours of ships and aircraft can be increased or decreased within a certain range and civilian hirings can be frozen if necessary, but the greatest proportion of Operation and Maintenance is not easily changed from year to year. This too is borne out by the data, which shows Operation and Maintenance to be less stable than Military Personnel but far more so than Procurement.

Procurement is relatively easy to change: production schedules can be drawn out or speeded up: new systems can be delayed for additional RDT&E; and new systems started up or, very rarely, old ones canceled. The data shows PROC to be the most variable category relative to the others.

It is possible that Administration budget action is purely incremental in nature. When funds become less available those categories easily cut suffer the most, while those categories which are relatively impervious to cuts suffer less. The exception to this pattern is Research, Development, Test & Evaluation.

Research, Development, Test & Evaluation is relatively susceptible to potential cuts. New project starts can be delayed, current projects shelved, old or obsolete programs canceled and basic research reduced in order to reduce funding. On the other hand, funding can also be increased quickly when funds are readily available. The data shows that, when funds are abundant, RDT&E has the second highest growth rate and the lowest percentage of the annual DOD increment. This could be expected performance for easily changed categories. However, contrary to what would be expected using Kanter's budgetary model, when funds become less availab,e RDT&E shows the highest growth rate and the highest percentage of the DOD increment. At the same time, the other easily changed category, PROC, drops from first to fourth place and from first to third place respectively.

When funds become tight, RDT&E continues to do the best relative to the other categories, while PROC does the worst.

If the Administration's budget behavior was purely budgetary, Research, Test, Development & Evaluation would be expected to show performance similar to Procurement. It obviously does not. Research, Test, Development & Evaluation's continued success in the face of shrinking funds and the trade-offs between RDT&E and Procurement are indicative of strong programmatic behavior at the Administration level, at least for these two categories. The data presented here indicates that Presidential/OMB budget actions are inspired largely by policy preferences and that many decisions appear to be based on judgemental relationships between weapons systems and perceived national security needs.

This study has shown that there are distribution patterns of funds within the DOD total. The patterns seen at this level of aggregation would seem to weaken the arguments in support of the linear incrementalist budgeting models. In this case the whole is less informative than the parts. The study also supports the concept that all programs are not equal and that categories do differ in their degree of "cutability".

This descriptive analysis of the DOD budget for the last 30 years does not provide conclusive evidence for Spinney's proposition that historical budget behavior has resulted in shrinking forces, low peacetime readiness, and declining

rates of modernization but there does appear to be an emphasis on weapons systems over manpower and support costs. The results indicate that the concentration on the PROC and RDT&E categories is an intentional programmatic policy decision. In spite of Spinney's proposals, it remains to be seen whether this decision has had any long term effect on military readiness or not.

C. AREAS FOR FURTHER STUDY

The Federal Budget, particularly the defense budget, is a virtually limitless field for further research. There are several possibilities for continuing the research presented here. The data presented for the four categories could be further broken down by service. This would allow an analysis to be made of the relative success of each service in competing for scarce DOD resources. Combined with the current data a reasonably distinct picture of the detailed distribution of DOD funds over the last 30 years should emerge.

Another subject for study could be an attempt to determine what the historical impetus has been for programmatic budgeting decisions. This could take the form of an attempt to answer the question: How have socio-political events such as foreign and domestic wars, the civil rights movement, or economic recessions affected defense budgeting decisions?

A final topic for further study would be an attempt to determine whether or not new weapons systems are truly

becoming too complex for today's military personnel. Are the problems Spinney sees with the modern military real and if so, is historical budgeting behavior to blame?

APPENDIX A

BUDGET DATA
CURRENT DOLLARS
(in Millions)

FY	DOD	MP	O&M	PROC	RDT&E
1955	41,850	10,863	10,635	15,200	845
1956	34,000	10,319	9,103	12,231	1,350
1957	35,547	10,928	9,322	11,673	1,430
1958	38,000	11,322	10,126	12,418	1,580
1959	39,779	11,431	10,580	13,878	1,795
1960	40,945	11,219	10,315	13,937	2,842
1961	42,745	11,352	10,417	13,849	3,123
1962	44,660	11,464	10,638	14,423	3,938
1963	48,300	12,268	11,132	15,778	5,700
1964	51,000	12,190	11,230	16,320	6,560
1965	51,200	13,225	11,511	14,735	6,060
1966	47,900	13,290	11,687	13,180	5,910
1967	57,150	16,400	14,190	15,930	5,940
1968	72,300	19,787	18,022	21,584	6,710
1969	76,806	20,505	21,137	23,395	7,280
1970	78,471	21,444	20,713	23,375	7,296
1971	71,190	20,911	18,453	18,729	6,897
1972	74,975	20,105	18,994	17,875	6,985
1973	75,903	22,300	19,152	16,029	7,399
1974	78,200	22,500	20,162	16,427	7,573
1975	84,600	24,428	23,030	16,289	8,369
1976	89,800	25,001	25,636	16,416	9,024
1977	99,561	25,250	27,805	20,161	9,728
1978	109,523	26,005	30,423	23,616	10,592
1979	115,200	26,866	33,374	24,007	10,923
1980	122,700	28,447	35,105	25,248	11,804
1981	142,700	31,705	42,265	30,206	13,638
1982	184,399	38,280	54,621	39,775	16,976
1983	215,900	44,524	59,873	54,393	20,164
1984	238,600	47,676	64,712	67,511	23,760

APPENDIX B

BUDGET DATA
CONSTANT 1972 DOLLARS
(in Millions)

FY	GNP* DEFLATOR	DOD	MP	O&M	PROC	RDT&E
1955	60.84	68,787	17,855	17,481	24,984	1,389
1956	62.79	54,149	16,434	14,498	19,479	2,150
1957	64.93	54,747	16,830	14,358	17,978	2,202
1958	66.04	57,541	17,144	15,333	23,346	2,392
1959	67.60	58,845	16,910	15,651	20,530	2,655
1960	68.70	59,600	16,331	15,014	20,287	4,137
1961	69.33	61,654	16,374	15,025	19,975	4,505
1962	70.61	63,249	16,236	15,066	20,426	5,577
1963	71.67	67,392	17,117	15,532	22,015	7,953
1964	72.77	70,084	16,751	15,432	22,437	9,015
1965	74.36	68,854	17,637	15,480	19,816	8,150
1966	76.76	62,402	17,314	15,225	17,170	7,699
1967	79.06	72,287	20,743	17,948	20,149	7,513
1968	82.54	87,594	23,973	21,834	26,150	8,129
1969	86.79	88,496	23,626	24,354	26,956	8,388
1970	91.45	85,808	23,449	22,650	25,560	7,978
1971	96.01	74,149	21,780	19,220	19,507	7,183
1972	100.00	74,975	20,105	18,944	17,875	6,985
1973	105.75	71,776	21,870	18,111	15,157	6,996
1974	115.08	67,953	19,552	17,520	14,274	6,581
1975	125.79	67,255	19,420	18,308	12,949	6,653
1976	132.34	67,856	18,891	19,371	12,404	6,819
1977	140.05	71,090	18,030	19,854	14,396	6,946

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*GNP deflators were obtained from The Economic Report of the President [Ref. 16] with the exception of FY83 and FY84, which are estimates from the Budget of the United States Government [Ref. 15].

FY	GNP* DEFLATOR	DOD	MP	O&M	PROC	RDT&E
1978	150.42	72,811	17,288	20,225	15,700	7,042
1979	163.42	70,493	16,440	20,422	14,690	6,684
1980	178.64	68,686	15,924	19,651	14,133	6,608
1981	195.51	72,989	16,217	21,618	15,450	6,976
1982	207.23	88,983	18,472	26,358	19,194	8,192
1983	221.50	97,472	20,101	27,031	24,557	9,103
1984	229.40	104,010	20,783	28,209	29,429	10,358

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